

**I claim:**

1. A wheel drum structure of an inner stator with inbuilt switches, comprising:

an inner stator portion with a hollow space formed at an inner ring portion end thereof, said inner stator portion having also wire grooves for receiving a plurality of sets of stator coils;

two stator ring portion end cover plates covering upper and lower end faces of said inner stator ring portion end, said two end cover plates corresponding to the same center of an outer rotor portion and said inner stator portion to form a concentric positioning end;

a plurality of switches soldered and fixed on a switch circuit board, said switch circuit board being fixed beside said stator ring portion end cover plates;

a wheel drum supporting shaft pressed and joined at said concentric positioning end of said end cover plates, said supporting shaft being provided with at least more than one through holes, instructions for switching stator coil windings and said switches being transferred from an external control system via said through holes; and

an outer rotor portion including outer rotor magnets and a magnet iron yoke ring, said outer rotor portion corresponding to said inner stator portion so that an armature can react to rotate and output torque.

2. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein said inner ring portion end and stator tooth ends of said inner stator portion are formed by separately drawing and stacking, and said stator tooth ends are sleeved with wire groove seats and a plurality of sets of stator coils and then assembled at said inner ring portion end to form said

inner stator portion.

3. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 2, wherein said stator coils are formed by means of separate winding or bending, and are then sleeved with said wire groove seats and said stator tooth ends to form an assembly, which is installed at said stator portion inner ring end to form said inner stator portion.
4. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 2, wherein said stator coils are directly wound in said wire groove seats, and are then sleeved with said stator tooth end to form an assembly, which is installed at said stator portion inner ring end to form said inner stator portion.
5. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein said inner ring portion end and stator tooth ends of said inner stator portion are integrally formed by drawing and stacking.
6. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 5, wherein said plurality of sets of stator coils of said inner stator portion are concentratedly wound across grooves and insulatively disposed in said stator portion wire grooves.
7. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 5, wherein said plurality of sets of stator coils of said inner stator portion are concentratedly wound one groove after another and insulatively disposed in said stator portion wire grooves.
8. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein said switches are of mechanical type with contacts, and said plurality of sets of stator coils form a stator coil winding network of

variable number of turns because of switching of said switches with contacts.

9. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein said switches are electronic semiconductor power switches without contacts, and said plurality of sets of stator coils form a stator coil winding network of variable number of turns because of switching of said power switches.
10. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein the total number of said switches can be increased or decreased according to the number of turns formed after said stator coils are switched.
11. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein the stator coil winding network can be designed to be of various kinds of types according to the requirement of operational conditions.
12. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein instructions of switching signal are changed according to the level of rotation speed of motor, and said instructions will output different switching signals according to the level of rotation speed of motor, and let switch contacts generate different switching actions.
13. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein instructions of switching signal are changed in manual switching way, and said instructions will let switch contacts generate different switching actions according to manual switching signals.
14. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein flanges are formed at outer edge ends of said

inner stator portion end cover plates corresponding to said inner stator ring portion end, and cover the upper and lower end faces of said inner stator ring portion end, and a plurality of fixing holes are disposed on said end cover plates, and said end cover plates are joined with the two end faces of said stator ring portion end via said fixing holes so that a hollow space is formed in said inner ring portion.

15. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein switch contacts of said switches are connected to said plurality of sets of stator coils, and can form a coil winding network of various kinds of number of turns, and said switches are controlled by instructions of a switch control system to switch said contacts, and switching of said contacts lets said inner stator portion have various kinds of coil winding networks of variable number of turns, i.e., the electromotor or generator includes various kinds of variable counter electromotive force coefficients  $K_E$  and torsion coefficients  $K_T$ .

16. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein a permanent magnet of said rotor portion is a tube-shaped magnet adhered on a surface of said magnet iron yoke ring to let said rotor portion correspond to said stator portion so that an armature can react to rotate.

17. The wheel drum structure of an inner stator with inbuilt switches as claimed in claim 1, wherein a permanent magnet of said rotor portion is formed by individually adhering a plurality of permanent magnets on a surface of said magnet iron yoke ring to let said rotor portion correspond to said stator portion so that an armature can react to rotate.

18. The wheel drum structure of an inner stator with inbuilt switches as  
claimed in claim 1, wherein a permanent magnet of said rotor portion is  
formed by individually embedding a plurality of permanent magnets into  
said magnet iron yoke ring to let said rotor portion correspond to said stator  
5 portion so that an armature can react to rotate.